TITLE: **SWL11_Bottle_data_README.docx**

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FUNDING SOURCE/GRANT NUMBER: National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO) Arctic Research Program (ARP); Grant No. NA08OAR4310608; DFO Canada's Three Oceans program

ORIGINAL AWARD TITLE: Benthic carbon cycling and ecosystem structure in the northern Bering and Chukchi Seas

DATA ARCHIVE: DBO data archive link: http://dbo.eol.ucar.edu/

DATASET OVERVIEW:
This dataset includes measurements of water samples collected at hydrographic stations from the annual Canadian Coast Guard Service Sir Wilfrid Laurier cruise during July 2011. Data includes by column, Cruise #, Event #, Station Number (#), Station Name (Stn. Name), Station Water Depth (m), Date and time (UTC) (yy/mm/dd), UTC time (hh:mm), latitude (°N), and longitude (°W), nominal depth (w), Rosette Bottle #, Sample Number, bottle trip location, raw CTD data (pressure, temperature (°C), Salinity, dissolved Oxygen concentration, Chlorophyll a concentration, chromophoric dissolved organic carbon (CDOM), nutrients (Phosphate, Silica, Nitrite+Nitrate, Ammonium) and delta-O18 (stable oxygen isotope) values. Additional parameters in the columns from sensors and data descriptors are provided in this file and defined below.

INSTRUMENT DESCRIPTION:
Water samples were collected from rosette bottles attached to a Seabird Model SBE19 CTD for nutrients, chlorophyll and oxygen-18/16 ratios. Water temperature, salinity, and other data that were electronically measured with sensors on the CTD are also provided for the depths where each bottle was closed.

DATA COLLECTION AND PROCESSING
Water column collections included water sampling for inorganic nutrients, dissolved oxygen, oxygen-18/16 ratios of seawater, and chlorophyll *a* at up to 6 depths at each station from the rosette bottles. Sensor data for temperature and salinity are also included. Subsamples for inorganic nutrients were collected from the CTD rosette, filtered shipboard, and frozen for post cruise analyses. Nutrient samples were processed by either technical support at the Institute of Ocean Sciences (IOS), Department of Fisheries and Oceans Canada (DFO) and/or at the Nutrient Analytical Services Laboratory (NASL) at the Chesapeake Biological Laboratory (CBL), (http://nasl.cbl.umces.edu/) at the University of Maryland Center for Environmental Science (UMCES). Samples were processed for all 4 nutrients: phosphate (PO4), nitrite + nitrate (NO2+NO3), silica (SiO4), and to a limited extent, ammonium (NH4); data on dissolved oxygen are available also from the uncalibrated CTD sensor. Water samples for $^{18}O/^{16}O$ ratios were collected in small vials, sealed to prevent evaporation and returned for analysis. These samples

were analyzed at the University of Maryland Center for Environmental Science using a Thermo DeltaPlus Stable Isotope Mass Spectrometer coupled to a Gasbench peripheral. Data are reported in the delta notation relative to Vienna Standard Mean Ocean Water (V-SMOW). The water column chlorophyll was analyzed shipboard using a Turner Designs AU-20 fluorometer (non-acidification or Welschmeyer method) following a 24-hour in the dark incubation with 90% acetone at 4°C method (see Cooper et al. 2012, 2013 for further details).

Data File Structure:
File Names (Formats): **SWL11 Bottle data.xls**
(*NOTE: the most recent version on EOL website will have updated version number for data file, but readme file stays the same, unless content modified)

Files Data Parameters by Column:

A	Cruise
B	Cast No.
C	DBO Line
D	DBO Station Name
E	Historical Station Name
F	place holder
G	Cast Start Time [UTC]
H	LAT N
I	LON W
J	Water Depth [m]
K	Cast Depth [m]
L	Raw Pres [dbar]
M	Sample No. [All others match to this sample number]
N	Bottle Integrity [0=good, 1=leak, 2=bad]
O	Trip [US (up stop), UN (up no stop), USM (up stop mix) or DN (down no stop)]
P	Rosette Bot No.
Q	CTD Salinity 0
R	CTD Salinity 1
S	SBEoxmL/L
T	Sigma-e
U	Scan
V	T0 90C
W	T1 90C
X	Xmiss
Y	FLSP
Z	Alt M
AA	Salt Sample No.
AB	Salt-1
AC	Salt-2
AD	Analyst Comment
AE	QC Process
AF	Salt
AG	Nut Sample No.
AH	Frozen sample
AI	NO3-1 [mmol/m3]

AJ	NO3-2 [mmol/m3]
AK	SiO4-1 [mmol/m3]
AL	SiO4-2 [mmol/m3]
AM	PO4-1 [mmol/m3]
AN	PO4-2 [mmol/m3]
AO	NO3 [mmol/m3]
AP	SiO4 [mmol/m3]
AQ	PO4 [mmol/m3]
AR	Nut Sample No. (Grebmeier)
AS	Analyst Comment (Grebmeier)
AT	NO3 [mmol/m3] (Grebmeier)
AU	IOS QF (Grebmeier)
AV	SiO4 [mmol/m3] (Grebmeier)
AW	IOS QF (Grebmeier)
AX	PO4 [mmol/m3] (Grebmeier)
AY	IOS QF (Grebmeier)
AZ	NH4 [mmol/m3] (Grebmeier)
BA	IOS QF (Grebmeier)
BB	Ndiff (IOS - JG)
BC	Sdiff (IOS - JG)
BD	Pdif x10 (IOS - JG)
BE	Chl Sample No. (Grebmeier)
BF	ChlTOT-1 [ug/L]
BG	IOS QF-1
BH	Analyst Comment
BI	ChlTOT [ug/L] (Grebmeier)
BJ	IOS QF (Grebmeier)
BK	O18-1 [‰ VSMOW] (Grebmeier)
BL	O18 [‰ VSMOW] (Grebmeier)
BM	Sort Reference

Data Version Number and Date: Version 1, 07/09/2015

REFERENCES

Cooper, L.W., M.A. Janout, K.E. Frey, R. Pirtle-Levy, M.L. Guarinello, J.M. Grebmeier, and J.R. Lovvorn. 2012. The relationship between sea ice break-up, water mass variation, chlorophyll biomass, and sedimentation in the northern Bering Sea. Deep Sea Research Part II 65, 141-162; doi:10.1016/j.dsr2.2012.02.002.

Cooper, L.W, M.G. Sexson, J.M. Grebmeier, R. Gradinger, C.W. Mordy, J.R. Lovvorn. 2013. Linkages Between Sea Ice Coverage, Pelagic-Benthic Coupling and the Distribution of Spectacled Eiders: Observations in March 2008, 2009 and 2010 from the Northern Bering Sea, Deep Sea Research Part II, Topical Studies in Oceanography, 94, 31-43.